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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,779	11/16/2001	Yoshiko Iida	862.C2439	7713

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EXAMINER	
ROBINSON, MYLES D	
ART UNIT	**PAPER NUMBER**
2625	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/987,779	IIDA ET AL.	
	Examiner	Art Unit	
	Myles D. Robinson	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14 - 19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14 and 16 - 19* is/are rejected.

7)☒ Claim(s) *15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/22/2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment was received on 3/6/2007, and has been entered and made of record. Currently, **claims 14 – 19** are pending.

Response to Arguments

2. Applicant's arguments (*see Interview Summary mailed on 4/16/2007 and Remarks 3/6/2007*) with respect to the rejection(s) of **claims 14 – 19** under §103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of **Nakabayashi *et al.*** (U.S. Patent No. 6,628,822).

Information Disclosure Statement

3. The examiner has considered the references listed in the Information Disclosure Statement (IDS) originally submitted on 3/22/2002, which were resubmitted on 3/6/2007 with accompanying receipt post card bearing the Office's stamp acknowledging receipt of the originally submitted IDS and accompanying documents (see attached PTO-1449).

EXAMINER'S AMENDMENT

4. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Raymond DiPerna on 4/12/2007 (*see Interview Summary mailed on 4/16/2007*).

The application has been amended as follows:

Claim 14. (previously presented): A method of performing color processing to output color data to an image processing unit, comprising the steps of:

acquiring spectral data which indicates an input color;

acquiring characteristic information of the image processing unit;

determining a color data format of color data in accordance with the acquired characteristic information of the image processing unit to output the color data to the image processing unit;

generating the color data having the determined color data format from the acquired spectral data; and

outputting the generated color data to the image processing unit,

wherein the color data format includes a spectral data format[[,]] and a color component format which indicates a color using a plurality of color component data, and said generating step includes calculating the plurality of color component data from the spectral data when the color component format is determined as the color data format in said determining step.

Claim 18. (previously presented): A computer program product stored in a computer readable medium comprising computer program code for a method of performing color processing to output color data to an image processing unit, the method comprising the steps of:

acquiring spectral data which indicates an input color;

acquiring characteristic information of the image processing unit;

determining a color data format of color data in accordance with the acquired characteristic information of the image processing unit to output the color data to the image processing unit;

generating the color data having the determined color data format from the acquired spectral data; and

outputting the generated color data to the image processing unit,

wherein the color data format includes a spectral data format[[,]] and a color component format which indicates a color using a plurality of color component data, and said generating step includes calculating the plurality of color component data from the spectral data when the color component format is determined as the color data format in said determining step.

Claim 19. (previously presented): An image processing apparatus for performing color processing to output color data to an image processing unit, comprising:

an acquiring section, arranged to obtain spectral data which indicates an input color and to acquire characteristic information of the image processing unit;

a determiner, arranged to determine a color data format of color data in accordance with the acquired characteristic information of the image processing unit to output the color data to the image processing unit;

a generator, arranged to generate the color data having the determined color data format from the acquired spectral data; and

an outputting section, arranged to output the generated color data to the image processing unit,

wherein the color data format includes a spectral data format[[,]] and a color component format which indicates a color using a plurality of color component data, and said generator calculates the plurality of color component data from the spectral data when the color component format is determined as the color data format by said determiner.

Claim Rejections - 35 USC § 102

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. ***Claims 14 and 17 – 19*** are rejected under 35 U.S.C. 102(e) as being anticipated by **Nakabayashi *et al.*** (U.S. Patent No. 6,628,822).

Referring to **claim 19**, Nakabayashi discloses an image processing apparatus (*see Figs. 9 – 10, 26 – 27, 31 – 32 and 36 – 37, picture processing units 1-1, 1-2, 612, 621 [column 24, lines 44 – 51, column 25, lines 17 – 40, 37, lines 3 – 15, column 35, lines 20 – 24, column 38, lines 17 – 28, column 56, lines 33 – 54, column 57, lines 31 –*

60 and column 59, lines 36 – 40]) for performing color processing to output color data to an image processing unit (*see Figs. 9 – 10, printer 20 [column 35, lines 25 – 30, column 37, lines 43 – 45 and column 38, lines 39 – 41] and Figs. 36 – 37 wherein picture processing units 813, 823 can be constructed by a scanner, a video camera or a printer [column 59, lines 36 – 40]*), comprising:

an acquiring section, arranged to obtain spectral data which indicates an input color (*see Figs. 9 – 10 wherein sensors S_3, S_4 obtain spectral data indicating chromaticity of the image [column 24, lines 14 – 24, column 24, line 52 – column 25, line 3, column 25, lines 17 – 49, column 35, lines 25 – 30, column 37, lines 31 – 37 and column 38, lines 22 – 33] and see Figs. 26 – 27 and 31 – 32, ambient environmental data V_{out} [column 56, lines 33 – 54 and column 57, lines 31 – 60] and see Figs. 36 – 37 wherein picture processing unit 612, 621 acquires device output data D'_{out} which corresponds to the surrounding environment data V_{out} [column 59, lines 8 – 17 and 25 – 29]*) and to acquire characteristic information (*see Figs. 9 – 10 wherein profile P_4 are analogous to characteristic information [column 1, line 55 – column 2, line 20, column 24, lines 5 – 14]*) of the image processing unit (*see Fig. 9 wherein converter 16 of picture processing unit 1-1 acquires profile P_4 of printer 20 [column 37, line 38 – 42], see Fig. 10 wherein converter 16 of picture processing unit 1-1 refers to profile P_4 of printer 20 [column 38, lines 34 – 38], see Fig. 26 wherein picture processing unit 1-1 acquires device profile data D_{out} [column 56, lines 33 – 43], see Fig. 27 wherein picture processing unit 1-2 acquires device profile data D_{out} [column 56, lines 44 – 54], see Figs. 36 – 37 wherein picture processing unit 612, 621 acquires device output data D'_{out}*

which corresponds to the device profile data D_{out} of picture processing unit 813, 823 and its surrounding environment data [column 59, lines 8 – 17 and 25 – 29]),

a determiner (*see Figs. 9 – 10 and 31 – 32 wherein visual environment conversion circuit 15 uses sensors S_3, S_4 to obtain spectral data indicating chromaticity of the image in order to generate the color format of image output and see Figs. 36 – 37 wherein converter 614, 623 uses spectral data from surrounding environment data V_{out} within device output data D'_{out} to generate color format of picture data I_{out}*), arranged to determine a color data from format of color data in accordance with the acquired characteristic information of the image processing unit to output the color data to the image processing unit (*see Figs. 9 – 10 and 31 – 32 [column 25, lines 17 – 49, column 27, lines 44 – 54, column 32, lines 4 – 29, column 33, lines 19 – 23, column 37, lines 31 – 37, column 39, lines 6 – 12 and column 57, lines 31 – 60] and see Figs. 36 – 37 [column 59, lines 8 – 17 and 31 – 35]*),

a generator (*see Figs. 9 – 10 and 31 – 32 wherein converter 16 uses profile P_4 to obtain characteristic information about the image output device to generate the color format of the color format and see Figs. 36 – 37 wherein converter 614, converter 623 uses characteristic information from device output data within device output data D'_{out} to generate color format of picture data I_{out}*), arranged to generate the color data having the determined color data format from the acquired spectral data (*see Figs. 9 – 10 and 31 – 32 [column 25, lines 51 – 56, column 32, lines 30 – 58, column 33, lines 24 – 27, column 35, lines 54 – 60, column 36, lines 24 – 32, column 37, lines 38 – 42, column*

38, lines 34 – 38, column 39, lines 13 – 18 and column 57, lines 31 – 60] and see Figs. 36 – 37 [column 59, lines 8 – 17 and 31 – 35]), and

an outputting section, arranged to output the generated color data to the image processing unit (*see Figs. 9 – 10, printer 20 [column 35, lines 25 – 30, column 37, lines 43 – 45 and column 38, lines 39 – 41] and Figs. 36 – 37 wherein picture processing units 813, 823 can be constructed by a scanner, a video camera or a printer [column 59, lines 36 – 40]*),

wherein the color data format includes a spectral data format (*see Figs. 9 – 10 wherein visual environment conversion circuit 15 determines color data output format based partly upon spectral data indicating chromaticity obtained from sensors* S_3, S_4, *see Figs. 31 – 32 wherein visual environment conversion circuit 15 determines color data output format based partly upon ambient environmental data* V_{out} *and see Figs. 36 – 37 wherein converter 614, 623 determines the color data output format based partly upon device output data* D'_{out} *which corresponds to the surrounding environment data* V_{out}) and a color component format which indicates a color using a plurality of color component data (*see Figs. 9 – 10 wherein visual environment conversion circuit 15 determines the color data output format based partly upon the color component data from LMS spatial data which is data associated with signals of the cones of the human visual system [column 27, lines 31 – 54 and column 32, lines 4 – 29], see Figs. 31 – 32 wherein visual environment conversion circuit 15 determines the color data output format based partly upon the picture data* I_{in} *sent from viewing environment conversion circuit 12 and see Figs. 36 – 37 wherein converter 614, 623 determine the color data*

output format based partly upon the picture data I_{in} sent from converter 613, 622), and said generator calculates the plurality of color component data from the spectral data when the color component format is determined as the color data format by said determiner (*column 25, lines 51 – 56, column 32, lines 30 – 58 and column 36, lines 24 – 32*).

Referring to **claim 14**, the rationale provided in the rejection of claim 19 is incorporated herein. In addition, the apparatus of claim 19 performs the method of claim 14.

Referring to **claim 18**, the rationale provided in rejection of claim 14 is incorporated herein. The method of claim 14 is stored as a program of instructions of claim 18 within memory and executed by a series of processors (***).

Referring to **claim 17**, Nakabayashi discloses the method further wherein the step of acquiring characteristic information includes acquiring the information, for which the color data format is determined, from the image processing unit (*column 37, lines 38 – 42*).

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. ***Claim 16*** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Nakabayashi *et al.*** (U.S. Patent No. 6,628,822) in view of **Vincent** (U.S. Patent No. 5,272,518).

Referring to **claim 16**, Nakabayashi discloses the method as discussed above in the rejection of claim 14 but does not explicitly disclose the method further wherein the plurality of color component data are generated by convolution calculation of the spectral data and a color matching function.

Vincent discloses the method wherein the plurality of color component data are generated by convolution calculation of the spectral data and a color matching function (*see Figs. 1A – 1C, photosensor array 19 [column 8, lines 26 – 33 and 43 – 60] and see Fig. 2, filter module 46 comprising submodules 52 – 54 [column 13, lines 58 – 62 and column 14, lines 20 – 30]*).

Nakabayashi and Vincent are combinable because they are both from the same field of endeavor, being color matching between different image presentation devices and in consideration of their respective ambient light sources. At the time of the invention, it would have been obvious to one of ordinary skill in the art to include color matching by performing a convolution calculation of the spectral data along with color matching systems between different image presentation devices. The suggestion/motivation for doing so would have been to better compensate for non-uniform sensitivity, as a function of wavelength, of photodetector elements or for non-standard light sources illuminating objects and to provide better color matching between image presentation devices, as suggested by Vincent (*column 5, lines 16 – 62, column 6, lines 4 – 22, column 7, lines 6 – 15, and column 16, line 55 – column 17, line 47*).

Allowable Subject Matter

9. **Claim 15** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Referring to **claim 15**, the innovative limitation that distinguishes the Applicant's claim is acquired spectral data is output to the image processing unit.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Zerlaut *et al.* (U.S. Patent No. 4,467,438) disclose a method for determining spectral response and spectral response mismatch between photovoltaic devices (*see Abstract and Fig. 1*).

Arai *et al.* (U.S. Patent No. 5,546,195) disclose an apparatus for reproducing color images wherein a neural network management unit is provided with a plurality of neural networks associated with types of illuminants and the neural network associated with the illuminant used for observation reference is selected, and appropriate color transformation is performed such that a color printing device outputs a color image on the basis of the generated color separation value (e.g. RGB, CMY, CMYK, etc.) (*see Abstract and Figs. 3, 4, 9 and 10*).

Yamada *et al.* (U.S. Patent No. 5,742,296) disclose an image processing method for executing image data conversion between different types of input and output devices having different color reproduction ranges (*see Abstract*).

MacKinnon *et al.* (U.S. Pre-Grant Publication No. 2002/0012461) disclose a method for measurement, encoding and displaying ob object color for digital imaging (*see Abstract and Fig. 6*).

Takahashi *et al.* (U.S. Pre-Grant Publication No. 2005/0237553) disclose a spectral distribution error evaluation apparatus used to evaluate precision of color matching between evaluation and target colors (*see Abstract and Figs. 3, 4A, 4B, 9 and 10*).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Myles D. Robinson whose telephone number is (571) 272-5944. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler M. Lamb can be reached on (571) 272-7406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MDR 5/17/07

TWYLER LAMB
SUPERVISORY PATENT EXAMINER